North Carolina Department of Health and Human Services
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Michael F. Easley, Governor

Dempsey Benton, Secretary

July 7, 2008

To: Dempsey Benton, Secretary

From: Dan Stewart, Deputy Secretary and Committee Chairman Dan Stewart

Subject: CRH Construction Review Committee Report

The Construction Review Committee, which includes representation from the Duke Health System, UNC Hospitals and Healthcare, First Health and key members of the Department of Health and Human Services, has met numerous times since being formed in February 2008, including two tours of the new Central Regional Hospital (CRH). The Committee focused on the facility issues that the Department of Health and Human Services had begun resolving, safety officer reports, and safety items identified by Committee members from the tour and lastly, transition challenges.

The external members of the committee were:

Mary Beck, Sr. Vice President – UNC Health Care

Anthony Lindsay, MD, Professor and Vice Chair, Department of Psychiatry – UNC Health Care

Mary Silverman, Director, Behavioral Sciences – FirstHealth of the Carolinas

Eileen Spahl, Clinical Director of Psychiatry and Rehab – UNC Health Care

Marvin Swartz, MD, Division Head, Division of Social and Community Psychiatry, Department of Psychiatry and Behavioral Sciences – Duke Health

It is important to remember that Central Regional Hospital was designed as a "safe" building as constructed. The unique safety demands of a psychiatric hospital exceed those of a normal hospital operating environment and require numerous external reviews. The safety issues in this report are primarily related to mental health patient safety. As referenced in the letter from James L. Hunt, AIA [see Attachment 4], a psychiatric building structure can not be made 100% safe. For example, items as innocuous as doors in a psychiatric hospital are potential hanging hazards. Ensuring safety must also incorporate policies, appropriate staffing, patient observation and patient assessments.

In the final assessment, the committee recognized that there has been significant progress in assuring safety of patients at the new Central Regional Hospital. There were a number of areas [see attached letter from UNC representatives – Attachment 1] that are particularly important to note, including:

- Central Regional Hospital is "*significantly safer than either Dix or Umstead Hospitals. This reality should not be underestimated.*"
- Regarding the prevalence of glass at the new Central Regional Hospital... "*We are convinced that the windows which will bring light and openness to the facility are safe for patients, based on tests for which you have provided information.*" [See attached letter from Viracom – Attachment 4]
- Medication administration at the new Central Regional Hospital... "*We compliment you on the pharmacy system you have developed that will enable you to enhance patient safety in the use of medications.*"
- "*The orientation we received for the staff communication and duress was impressive.*"

The committee also acknowledged appreciation for the opportunity to participate in evaluating facility safety at Central Regional Hospital and recognized the efforts and results that have been achieved in responding to recommendations and concerns regarding patient safety in the new facility.

The following report reflects a summary of the work of the committee, along with any outstanding issues identified during their review process.

FACILITY ISSUES

There were a number of areas where safety concerns were raised that have been resolved as of the date of this memorandum. Changes that were identified and have been completed include the following items related to the safety of patients:

- Modifying grab bars in handicap bathrooms
- Correcting stair rails provided and installed by contractor that were not per specification. (2 items)
- Closing off access ladder to roof
- Closing openings in the three treatment mall access stair wells
- Removing hose brackets in common handicap showers

It is important to note that the hospital was still under construction when the Umstead Safety Officer conducted his initial survey and identified many of the areas above, which served as the source of issues cited in news articles. Many of the items on the Umstead Hospital safety officer's list, referenced above, were marked as *"need to verify*". After verification, quite a number of the issues on the original list were invalid.

In addition, the safety officer was unaware of operational features of the hospital and included concerns in such areas as locked emergency stair exits that are not accessed or used by patients or staff during normal hospital operations. A complete listing of items identified in the survey is included in Attachment 5.

A second survey was later conducted by the Dix Safety Officer [Attachment 6.] It too had issues initially identified that were later determined to be invalid. However, both safety visits did have other safety issues, some of which were being corrected as part of the normal construction punch list.

There are always punch lists that are developed during the many construction inspections that take place before beneficial occupancy can occur. This is especially true in hospital construction and psychiatric hospitals have even more complexities. DHHS staff with the support of external architects and consultants have conducted ongoing and consistent reviews of construction during the entire process.

Letters from Behavioral Health Facility Consulting, LLC [see attached letter dated June 9, 2008 – Attachment 3] and Freelon Architects [see attached letter dated June 1, 2008 – Attachment 2] provide a professional assessment of the quality of the facility design and compliance with construction specifications and various code requirements. The facility has also undergone many inspections during the construction process by regulatory agencies such as the Office of State Construction, Department of Insurance and the Division of Health Services Regulation.

There will undoubtedly be in the future additional safety features and products developed that can be added to the hospital that will continually improve its operations.

COMMITTEE CONCERNS

Use of restraints. The use of restraints is a primary concern at all mental health facilities and CRH will be no different. Hospital management throughout the State-operated psychiatric hospital system is committed to reducing the already infrequent, but occasional use of this intervention.

In fact, there is a policy that restraints can not be a daily intervention. All that being said, an issue reviewed by the Committee was the size of restraint rooms at the new Central Regional Hospital.

The CRH was designed in accordance with guidelines of the American Institute of Architects Guidelines for Design and Construction of Health Care Facilities which indicate that rooms used for seclusion should be at least 60 square feet and rooms used for restraint should be at least 80 square feet. In the design of CRH, both the seclusion and restraint rooms were designed to be the same size, which is approximately 80.5

square feet, with dimensions of 7 feet wide by 11.5 feet deep which is 12 inches more narrow than the restraint rooms at Cherry and Broughton Hospitals.

The Committee reviewed in detail whether the width of the room would allow adequate working space on each side of the restraint bed. In conjunction with the policy of minimal use of restraints at all DHHS facilities and a more narrow bed than originally planned, CRH management believes that the width of the room is not a major issue, especially considering the State's minimal use of restraint policy. Finally, cameras were installed to provide additional medical staff oversight and document any incidents that might occur.

The committee's final evaluation concluded that the changes made by DHHS and hospital management were positive in resolving any concerns about the restraint rooms. There were no stated concerns regarding the padded seclusion rooms.

Specially strengthened glass. One of the most striking features of the new hospital is the amount of natural light and open areas that was designed to provide the best healing environment possible. The large amount of glass in the structure has led quite a few to question the glass from a safety perspective. Attachment 4 shows testing results for the glass. The patient room glass was impenetrable by a .38 caliber bullet while other building glass was successfully tested with fire extinguishers, sledgehammers, 4 inch pipe and 1 ½ inch pipe in preventing forced entry.

As mentioned previously the committee stated that *"We are convinced that the windows which will bring light and openness to the facility are safe for patients, based on tests for which you have provided information."* [See Attachment 1].

Other Facility Concerns/Comments. In a letter from the UNC representatives, there were additional areas of comment regarding the new Central Regional Hospital Facility [see attached letter from the UNC representatives – Attachment 1]. These included:

- *Design Features*: The committee was complimentary of design features such as external water cutoffs for patient rooms, negative pressure rooms and technology features.
- *Admitting Area*: Suggestions were made to consider placing windows in each interview room door, removing locks on interview room doors and adding a second door in the waiting area. The letter acknowledged that these items are in active consideration and complimented DHHS on the overall design of the admitting areas to prevent the spread of any potential infection from patients being admitted. (**Note:** The windows in the door have now been installed and the locks removed from the interview room doors. The second door addition to the waiting area should be completed the week of July 7.)
- *Medical Psychiatric Area:* The design of the unit provided that medical gas connections are located behind bathroom doors in five of the patient rooms. The committee commented that the solution of placing a door stop to protect the gas

headwall was adequate and the installation of extender strips to move the outlets closer to patient's beds was positive from the perspective of the respiratory therapist that evaluated the units.

Operationally, the committee recommended the lowest acuity patients be assigned to these rooms. The committee acknowledged that DHHS plans to remove sinks in the rooms because there are sinks accessible in anterooms was a solution to committee concerns, but also recommended additional staff training on the importance of hand washing. Finally, the committee recommended installation of foam alcohol canisters would improve infection control and provide infection control support. (**Note**: The sinks have now been removed from the medical unit rooms that have a sink in the anteroom.)

- *Inpatient Units:* The committee recommended operational consideration for oversight of patients doing laundry given the acoustical ceilings in the laundry rooms, potential misuse of patient chairs and securing the refrigerators in the medication rooms. (**Note:** The securing of the small countertop refrigerator has been completed.)

The final committee observation related to the rubber transition strips as a potential "trip hazard". While these strips meet code requirements, DHHS management will consider this in future planning for state psychiatric hospitals and will evaluate possible changes at CRH.

TRANSITION PLANNING

The Construction Review Committee has reviewed the transition planning process from a high level. Transition planning for the move of Dorothea Dix Hospital and John Umstead Hospital has required many months of planning within the current mental health system in developing the "best practices" of patient treatment and care in what is the State's most modern and best equipped mental health facility.

Merging and Move Challenges. Merging two hospitals while simultaneously moving to a new facility with modern equipment/technology and adopting, what may be in some instances, new operating protocols present both a challenge and an opportunity; but all are aimed at ensuring the most effective treatment and care of patients.

In order to facilitate an effective and efficient move, the Department of Health and Human Services commissioned an external review of all departmental transition plan documents. Three dominant themes that emerged from this review:

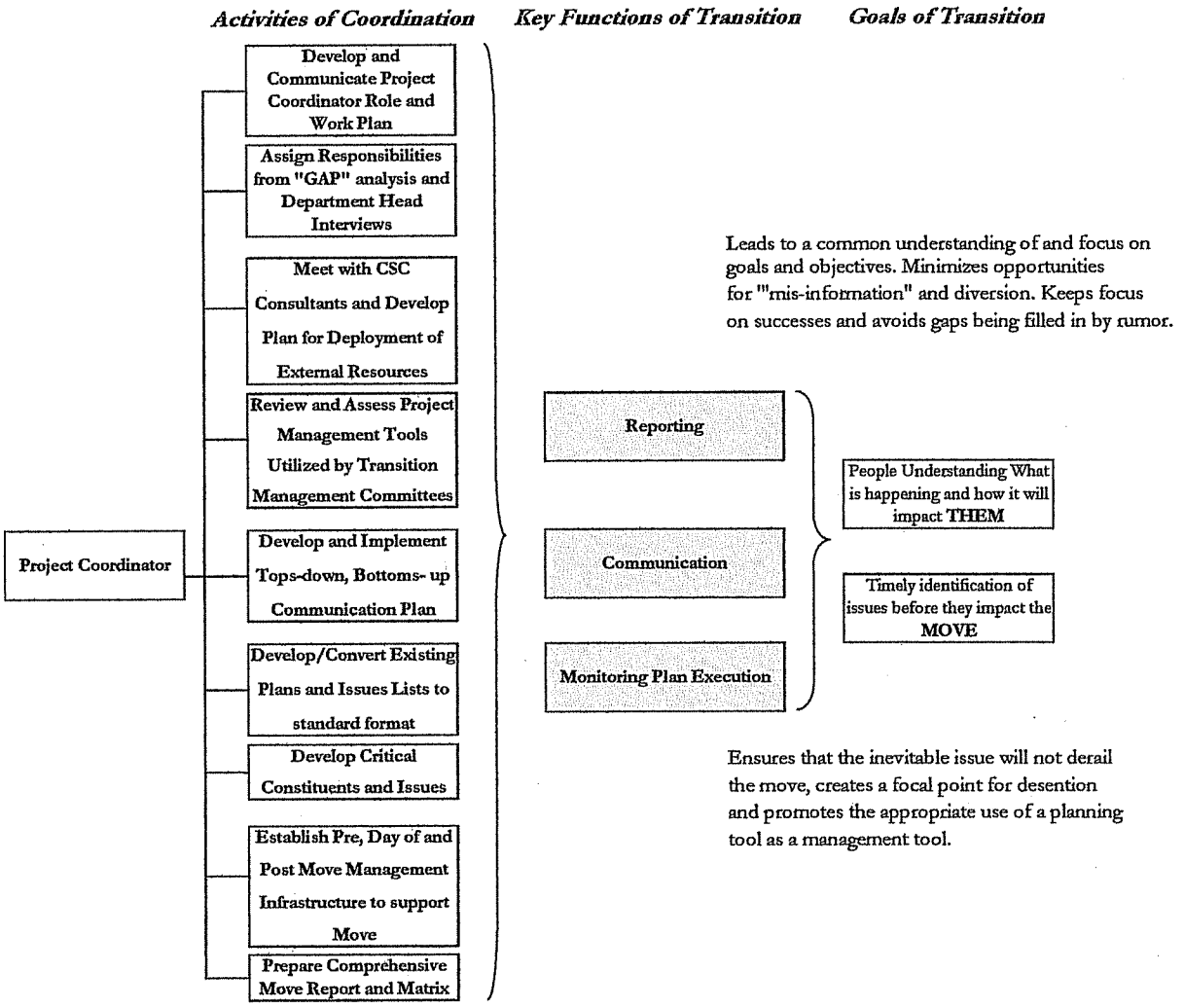
a) There has been a tremendous amount of work-to-date on the transition, primarily on merging the hospital operations.

b) There have been three distinct and important functions that leadership has been managing - operating 2 hospitals, merging 2 hospitals and moving 2 hospitals.

c) There was not a consistent transition planning tool and/or approach that has used by the Department Heads.

The primary deliverable from this review was a detailed assessment of the "GAPS" in the planning documents developed by the Department Heads, compared to an ideal planning standard. The gap analysis evolved from comparing existing plans against a traditional planning tool that possesses the attributes of specificity, being time bounded and measurable. Additionally, an "ancillary focuses/concerns" listing was compiled that included items not specifically related to move planning.

DHHS has established a Project Coordinator whose full-time responsibility is to ensure that all logistical move-related issues are addressed/resolved, detailed planning is documented and that communications take place to the various stakeholder groups. The following chart reflects the planning activities that the coordinator will implement to ensure an efficient and effective move:



The new plan includes weekly meetings with transition management, monthly meetings with internal/external constituents, the implementation of a project management system and use of move plans as a management tool.

Staff from both Dix and Umstead Hospitals have and are continuing to be trained in the new technologies, policies and orientation to the new facility.

CONCLUSION

The Committee believes that the building design and construction is inherently safe and significantly safer than the facilities being replaced at Dix and Umstead. An independent review of the State's psychiatric hospitals by PCG in the year 1999-2000 deemed the

Dorothea Dix facility as being unworthy of renovation—eight years ago. The actions taken by the Department of Health and Human Services will ensure:

- facility safety for patients and staff,
- effectiveness in meeting the needs of patients in one building as opposed to multiple buildings and
- effective coordination of the move of Dorothea Dix Hospital and John Umstead Hospital to the new Central Regional Hospital.

The comment by James Hunt, AIA [see Attachment 3], a nationally recognized psychiatric hospital design consultant, regarding the Central Regional Hospital bears repeating:

The overall design and configuration of the facility is, in my opinion, quite good and will help set a new standard for state psychiatric hospitals. The accepted "Standard of Care" for the design of all health care facilities is the "Guidelines for the Design and Construction of Health Care Facilities" that is published jointly by the Facility Guidelines Institute and the American Institute of Architects. The 2006 edition states in the section on Psychiatric Hospitals on page 145 the following:

"A safe environment is critical; however, no environment can be entirely safe and free of risk. The majority of persons who attempt suicide suffer from a treatable mental disorder or a substance abuse disorder or both. Patients of inpatient psychiatric treatment facilities are considered at high risk for suicide; the environment should avoid physical hazards while maintaining therapeutic environment. The built environment, no matter how well it is designed and constructed, cannot be relied upon as an absolute preventive measure. Staff awareness of the environment, the latent risks of that environment, and the behavior risks and needs of the patients served in the environment are absolute necessities...."

The Committee members believe that there will inevitably be items that will emerge and have to be addressed when the hospital opens and the normal "shakedown" period takes place. However, the Central Regional Hospital is both significantly safer for patients and employees and provides a physical environment that will enhance the healing and well-being of patients.

The Department is deeply appreciative of the CRH Construction Review Committee's input and their willingness to contribute their time and expertise to this important process. Their comments and discussion items have been extremely valuable to ensuring the safety of patients and staff of the new Central Regional Hospital.

Attachments:
1 UNC representatives letter dated June 30, 2008
2 Freelon letter dated June 10, 2008
3 Behavioral Health Facility Consulting, LLC letter dated June 9, 2008
4 Safety test results for glass used in CRH
5 Preliminary Safety Officer Report dated September 2007
6 Safety Officer Report dated May 2008

cc: Mary Beck, Senior Vice President – UNC Health Care

Anthony Lindsay, MD, Professor and Vice Chair, Department of Psychiatry – UNC Health Care

Mary Silverman, Director, Behavioral Sciences – FirstHealth of the Carolinas

Eileen Spahl, Clinical Director of Psychiatry and Rehab – UNC Health Care

Marvin Swartz, MD, Division Head, Division of Social and Community Psychiatry, Department of Psychiatry and Behavioral Sciences – Duke Health

Steve Oxley, MD

James Osberg, PhD.

Terry Hatcher, P.E.

Kevin Turner, AIA

Tim Winstead, AIA

Attachment 1

UNC HEALTH CARE

June 30, 2008

Mr. Dan Stewart, Deputy Secretary
NC DHHS Office of the Secretary
2001 MSC
Raleigh, NC 27699-2001

Dear Mr. Stewart:

The three of us appreciate the tour of the Central Regional Psychiatric Hospital (CHR) provided by DMH staff, leadership, and architectural team on June 17, 2008. We found that there was significant progress in assuring the safety of patients since our first tour of the facility earlier this year. We very much appreciate the opportunity to review and provide suggestions to you and your team for this important new hospital for the citizens of North Carolina. This beautiful new hospital building will be a significant improvement over the existing facilities at Dix and Ulmstead Hospitals once the building is fully opened and operational.

We would like to emphasize that we are not site surveyors, but rather are health professionals with expertise in psychiatric services. Our recommendations should be accepted in that context.

We appreciate the team's efforts to evaluate the facility, improve and enhance the safety of the building, and respond to concerns that were raised by the committees and others in the mental health community.

We appreciate the team's efforts to evaluate the facility, improve and enhance the safety of the building, and respond to concerns that were raised by the committees and others in the mental health community.

We have been asked to provide suggestions we have for the facility. With this in mind, our suggestions include the following:

1. **Admitting Area:** Our understanding is that there is a plan to move cameras into each of the interview rooms, and this is an excellent idea that we fully support. We also understand that staffing will not allow for twenty-four hour monitoring of the cameras, but the technicians will circulate through the area in an effort to assure that a safe environment is maintained. With this in mind, it may be helpful to consider placing a window in each of the interview room doors so that the technicians can see activity in the room and assure safety of both the patient and the staff member.

   An important issue that we understand you will address is that the doors in the interview rooms have locks that operate from the inside. We strongly suggest that the locks be removed from the interview room doors, and we appreciate your support in making this modification.

Finally, we recommend that a second door be added to the waiting room area on the opposite side from the existing door. This will enable greater control of the waiting room, and easier access should a problem occur. This idea arose during the tour, and we also understand that this is something you are considering for implementation in the near future.

The staffing plan for the admissions area was not available to us. We feel that adequate staffing of this area is crucial to ensure both patient and staff safety.

We would like to compliment the planning team for designing the admitting area as a negative pressure area. This is a very thoughtful addition to the facility, which will enable evaluation of the patients with potential infectious diseases prior to entering or creating problems for the rest of the patient population.

2. **The Medical Psychiatric Area:** There are five rooms in the Medical Psychiatric area with medical gas connections located behind the bathroom door. This is a problem that CRH was very aware of in its development, and it's one for which an easy fix is not readily available. Our understanding and observation is that a door stop was added in order to protect the medical gas headwall, a respiratory therapist has evaluated the medical gases and believes that they will work adequately, and finally an extender strip that will move some components of the medical gases closer to the patient bed will be installed somewhere in the near future. These are potential improvements, but the location of the medical gases will continue to be an operational challenge for the staff. Our recommendation is that the lowest acuity patients be placed in these rooms, and that the five rooms with the medical gases behind the bathroom door be the last five rooms selected for use. This is an operational rather than physical adjustment, and it should be evaluated over time for its effectiveness with consideration of moving the medical gas panels in the future if this location is found to be a problem.

   We also understand that the sink in each of these rooms will be removed due to the availability of a nearby sink in the anteroom. While this is an acceptable modification in the design and the sink is certainly not acceptable where it is presently located, our recommendation is that you provide extra staff training on the importance of hand washing and that you pay special attention to any infections that may result in these five rooms. Where appropriate, given the patient population, foam alcohol canisters may be a way to assure clean hands and provide infection control support. This should also be evaluated over time for its effectiveness.

3. **Inpatient Units:** The inpatient units are a significant improvement when compared to the inpatient units at either Dix or Ulmstead Hospitals. We have a few suggestions for your consideration.

   - We recommend that careful oversight of patients doing laundry be maintained due to the acoustical ceilings in these rooms. Our concerns are that patients may access the ceiling space by climbing on the washer/dryer and removing a panel; use ceiling strips as weapons; or, use the overhead space to hide contraband. Should the acoustical ceilings be a problem, our recommendation is that a solid ceiling be considered in this area.

- Our understanding is that there was care taken and that staff preference was used in the selection of the chairs in the inpatient area and other areas. The staff should be made aware that the chairs could possibly be used as weapons or projectiles, and if this becomes a problem you should consider sled-bottom chairs of a heavier weight rather than light-weight chairs with four legs as observed in the dayroom and in other areas of the hospital such as courtyards.

- Two issues were noted in the medication room we observed. The placement of the sink under the "med pass" window is awkward from a nursing point of view. Also, the medication refrigerator would ideally be built into the cabinetry rather than balanced on the counter top. We commend the comfortable size and general utility of the room; the suggestions above do not constitute a safety hazard as long as the refrigerator is secure when the automated medication dispensing unit is installed.

4. **Seclusion and Restraint Rooms:** The committee spent significant time working on the seclusion and restraint rooms and considered options and opportunities that were under consideration by you and other members of the staff. The improvement made in the seclusion room we observed including the planned installation of cameras, changes in the size of the bed, and active programs to reduce the amount of restraint and seclusion used at CRH are all positives in this regard.

5. **General Comments:**

- The improvements made by the staff between the first tour of CHR by the Committee appointed by Secretary Benton and the second tour by our team were significant and sincere. Many improvements have been made, but first and foremost we recognized that this facility is significantly safer than either Dix or Ulmstead Hospitals. This reality should not be underestimated.

- We appreciate and value the effort made to provide a healing environment to the patients that will be treated at CRH. We are convinced that the windows which bring light and openness to the facility are safe for patients, based on the tests for which you have provided information. We appreciate the background material provided to us regarding the various types of glass and other materials used and the effort made to provide a secure environment and a safe environment.

- We compliment you on the pharmacy system you have developed that will enable you to enhance patient safety in the use of medications. We strongly support and recommend that the request for 24 hour pharmacist services be approved. Our understanding is that the human resources office is considering ways to create a competitive package so that pharmacists can be recruited for the overnight shift. We believe that this would be an excellent enhancement for the overall operation of the facility.

- The orientation we received for the staff communication and duress was impressive.

- A continuing concern is related to the rubber transition strips between some areas where there are flooring changes. We believe the transition strips could be improved with less of a "bump" in them so that patient and staff safety can be enhanced. In future facilities

we recommend that a different transition strip be specified and that the existing transition strips be assessed for problems and replaced if found to be an issue.

Finally, and most importantly, the facility is only part of the overall clinical program. The most important component of patient safety in this new hospital is the staff. We recognize that other committees have provided information on staffing. We strongly encourage the management of CRH to assure that staffing levels and actual hired staff are adequate for the patient population being served prior to opening the new hospital.

Thank you for the opportunity to work with you and your team to enhance the care of the patients served by the new Central Regional Hospital.

Sincerely,

Anthony Lindsey, MD
Professor and Vice Chair
Department of Psychiatry
UNC – Chapel Hill

Eileen Spahl, RNC, M.Ed.
Director, Psychiatry and
Rehabilitation Services
UNC Hospitals

Mary Beck, MPH, FACHE
Sr. Vice President
UNC Health Care

Pl/mab/CRH - LTR 6-30-08.doc

ATTACHMENT 2

FREELON

June 10, 2008

Dempsey Benton
Secretary
Department of Health and Human Services
101 Blair Drive
Raleigh, NC 27603-2054

Dear Mr. Benton,

We appreciate the opportunity to provide a response regarding the current status of the Central Regional Hospital facility (the "CRH"). As you know, during construction of the CRH, the design team visited the site regularly to observe the work being performed by the contractors. At all times, we were mindful of the essential elements of the design that would be important to the effective operation of the facility and safety of its patients and staff.

Periodically, during on-site observation by the design team, DHSR staff or project monitors from the North Carolina State Construction Office, potential deviations from the contract documents were observed. However, to the best of our knowledge, all such problems have now been or are in the process of being rectified and should be complete prior to the scheduled opening of the CRH.

At this time, to the best of our knowledge, the CRH was built in accordance with the plans and specifications. These plans and specifications were designed, then reviewed and approved by the applicable regulatory agencies required by the State of North Carolina to ensure that they follow the contracts, statutes, codes, regulations, rules and policies established for public construction. We are not aware of any outstanding design or construction issues that pose a health or safety issue for the patients. As noted in Dan Stewart's letter (dated June 4, 2008), as part of the design process for the Eastern Regional Hospital, we brought in Jim Hunt, a nationally recognized psychiatric safety consultant to review the proposed design for that project. Given the discussions that were ongoing at the time regarding the CRH, we requested that Mr. Hunt tour the unoccupied facility and offer his opinion concerning his overall assessment of the CRH as it existed on January 14, 2008, the date of his visit. Mr. Hunt's general impression of the facility and his comments regarding the lever door handles are attached for your review.

With respect to Mr. Stewart's inquiry regarding the size of the restraint rooms, the rooms are constructed in accordance with AIA guidelines for Design and Construction of Health Care Facilities (2.3.2.2.1) which requires seclusion rooms to have a minimum size of 60 square feet with a minimum wall length of 7'-0". That same section requires restraint rooms to have a minimum size of 80 square feet. The seclusion and restraint rooms at CRH are 80.5 square feet and have a width of 7'-0" and thus comply with these guidelines. The plans for these rooms were also reviewed and approved by DHSR, as well as CRH users and administrators, as being suitable for use in the CRH.

The other specific issue raised in Mr. Stewart's letter relates to the selection of door hardware in the patient rooms. Again, at the time CRH was designed, we worked closely with DHSR, as well as CRH users and administrators to try to identify the door handle that was best suited for patient rooms in the facility. To our knowledge, there were no "anti-ligature" options available at that time. Consequently, no such fixture was considered, and a lever handle was selected because it complied with the ADA code and allowed the door to achieve the necessary functional requirements without being an inherent hanging hazard. Jim Hunt has confirmed that other psychiatric facilities around the country were utilizing lever handle door hardware at that time.

We trust that you know that The Freelon Group, Cannon Design and all of the other members of the design team have been and continue to be committed to delivering a hospital facility that is

conducive to the safe and effective treatment of the mentally ill in this state. If we can be of any further assistance to you, please do not hesitate to contact us again.

Sincerely,

THE FREELON GROUP, INC.

Timothy F. Winstead, AIA
Principal

enclosure

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ATTACHMENT 3

BEHAVIORAL HEALTH FACILITY CONSULTING, LLC
ASSISTING ORGANIZATIONS WITH DESIGN OF THE BUILT ENVIRONMENT & PATIENT SAFETY REVIEWS
2342 SE Alamar Rd., Topeka, KS 66605-1850
Ph: 785-231-4500 Fx: 785-354-4793
e-mail: jim@bhfcllc.com
web-site: www.bhfcllc.com

June 9, 2008

Mr. Derek Jones
Associate Principal
The Freelon Group
Post Office Box 12676
Research Triangle Park, NC 27709

Dear Mr. Jones,

I am a registered architect with over thirty years of experience with designing, maintaining and operating psychiatric facilities. I have had the opportunity to work with these facilities from the viewpoint of designer, facility manager and consultant. This gives me a broad perspective into their practical functionality and design. I am the co-author of a white paper titled "Design Guide for the Built Environment of Behavioral Health Facilities" that is published electronically on the website of the National Association of Psychiatric Health Systems (www.naphs.org).

The overall design and configuration of the facility is, in my opinion, quite good and will help set a new standard for state psychiatric hospitals. The accepted "Standard of Care" for the design of all health care facilities is the "Guidelines for the Design and Construction of Health Care Facilities" that is published jointly by the Facility Guidelines Institute and the American Institute of Architects. The 2006 edition states in the section on Psychiatric Hospitals on page 145 the following:

> *"A safe environment is critical; however, no environment can be entirely safe and free of risk. The majority of persons who attempt suicide suffer from a treatable mental disorder or a substance abuse disorder or both. Patients of inpatient psychiatric treatment facilities are considered at high risk for suicide; the environment should avoid physical hazards while maintaining therapeutic environment. The built environment, no matter how well it is designed and constructed, cannot be relied upon as an absolute preventive measure. Staff awareness of the environment, the latent risks of that environment, and the behavior risks and needs of the patients served in the environment are absolute necessities...."*

One particular concern is the use of lever handled locksets on the patient room and patient toilet room doors. At the time this facility was designed, these locksets or

paddle handle units were commonly used for this purpose, partially because there was nothing better on the market. Very recently, since the first of this year, there are some new products on the market that provide a higher level of safety than the locksets used in this facility.

The emphasis placed on suicide prevention by the JCAHO in the last few years and the pressure on the Veteran's Administration hospital system by class action law suits has created a considerable amount of interest from manufacturers now that did not exist just a few years ago. The presence of these lever handle locksets was considered by many to be an acceptable risk at the time this facility was designed. Staff training needs to include informing the staff members of this as well as other "latent risks" in this and all other psychiatric hospitals.

I am now finding manufacturers willing to work with me on producing improved products for this market and am actively engaged with several at this time. Hopefully some of these will be commercially available for use in the Eastern Region Hospital.

I am currently having discussions with another state to perform a patient assessment of their three year old facility to see what needs to be done to bring it up to current standards. It is very positive that there is so much activity in product development at this time. However, it will make it increasingly difficult to remain "state of the art" for any facility.

Sincerely,

James M. Hunt

James M. Hunt, AIA
President

ATTACHMENT 4

VIRACON

"The Leader in Glass Fabrication"™

800 Park Drive
P.O. Box 990
Owatonna, MN 55060
507-451-9555

GuardVue™

Product Specification Sheet
Physical Attack Resistant Glass Clad Polycarbonate

Customer:	Customer
Project:	Project/JobName
Glass Type:	GlassType
Product:	7/16" GuardVue 100
Make-up:	1/8" Clear Heat Strengthened Glass .050" Polyurethane Interlayer 1/8" Clear Polycarbonate .050" Polyurethane Interlayer 1/8" Clear Heat Strengthened Glass
Average Thickness:	.47"
Maximum Size:	48" x 84"
Average Weight:	4.6 $Lbs/_{Ft^2}$
Applicable Standards:	ANSI Z97.1-1984 Safety Glazing Materials for Buildings ASTM C 1036 Standard Specification for Flat Glass ASTM C 1048 Specification for Heat Treated Glass
Testing To:	H.P White TP-0500.01 - Level I Forced Entry H.P. White Level A Ballistics - .38 Special (Low Spall)
Standard Warranty:	Five Years from Date of Manufacture–
Installation:	As Detailed in Viracon's Security Glass Product Specification Guide

H. P. WHITE LABORATORY, INC.
3114 Scarboro Road • Street, Maryland 21154 (301) 838-6550

22 September 1988
(HPWLI 5105)

Viracon, Inc.
800 Park Drive
Owatonna, Minnesota 55060

Attention: Mr. Gary Shudy

Gentlemen:

As you witnessed during a recent visit, H.P. White Laboratory, Inc. completed ballistic and forced entry resistance testing of one 48" x 36" x 7/16" Transparent Armor sample received by H.P. White Laboratory, Inc. from Viracon, Inc. on 23 August 1988.

The transparent sample (Ref. 100 - 1/8" HS glass, .050" UR, 1/8" polycarbonate, .050" UR, 1/8" HS glass) was tested in accordance with the procedures of HPW-TP-0500.01 (formally HPW-TP-0100.00) for resistance to a Level A ballistic threat and a Level I forced entry threat. The sample was positioned 25 feet from the muzzle of the gun barrel to produce three zero degree obliquity impacts equally spaced on the perimeter of an 8" circle using .38 Special, 158 grain, Lead ammunition. Lumiline screens were positioned at 5 and 15 feet which, in conjunction with an elapsed time counter, were used to determine bullet velocities at 15 feet from the target. Penetrations were determined by visual examination of a .001" aluminum foil witness panel positioned 6 inches behind - and parallel to - the test sample.

Table I. SUMMARY OF BALLISTIC RESULTS

Test Sample	Ballistic Threat		Penetration	
Sample No. and Thickness (a)	Caliber	Velocity (fps)	Bullet	Glass Spall
100, .470"	.38 Special	(b)	0	1
	.38 Special	(b)	0	1
	.38 Special	754	0	1

(a) Average of four corner thicknesses.
(b) Muzzle flash caused inaccurate velocity reading.

Table II. SUMMARY OF FORCED ENTRY RESULTS

Level	Sequence	Description	Results
I	01-05	Sledgehammer, 4" Pipe, CO_2 Extinguisher, Sledgehammer and 1 1/2" Pipe	Glass Breaking, 11" x 4" through hole NO Forced Entry

As you requested, the test sample was discarded. Should you have any questions regarding this matter or if we may be of any further service, please do not hesitate to contact us.

Very truly yours,

H.P. WHITE LABORATORY, INC.

Michael A. Murray

MAM/wp
enclosures
Ref 100

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T E S T R E C O R D N O. 1

SAMPLES:

Thirty-seven samples of Model IL916 burglary resisting glazing material were submitted by the manufacturer and subjected to the following test program.

General - Samples of glazing material were mounted horizontally in a frame so as to provide uniform clamping on all four edges of the material with an unsupported area of 22 by 22 in. (56 by 56 cm).

The frame was constructed of 2 in. (51 mm) steel angles, 1/4 in. (6.4 mm) thick, welded at all four corners to form a rigid square. The square was supported by steel members, 8 in. (203 mm) high, at each of the four corners. The entire assembly was mounted on a solid wood platform formed of 3/4 in. (19.1 mm) plywood. The four clamping members were made of the same steel angle as used in the frame.

The part of the frame and clamping members coming in contact with the test sample were lined with hardwood striping. The wood was covered with rubber striping approximately 1/8 in. (3.2 mm) thick. Two clamps were used on each of the four sides to secure the test sample between the frame and the clamping members.

Test Sphere - Hardened smooth steel ball, weighing approximately 5 lb (2.27 kg) with a diameter of 3-1/4 in. (82.6 mm).

For the multiple impact test, the steel ball was released so as to strike each sample successively at five different locations within a 5 in. (127 mm) diameter circle, located at the approximate center of the sample. For the high energy impact test, each sample was subjected to one impact directed at the approximate center of the sample.

Pass-Fail Criteria - For the multiple impact test, the steel ball shall not penetrate the glazing material on any of the five impacts on nine of the ten samples tested. Penetration is defined as the ball passing completely through the glazing material. The same criteria applies to the high energy impact test for all three samples.

CAP/RLG:eq
no thry

MULTIPLE IMPACT TEST:

METHOD I, ROOM TEMPERATURE

Ten samples were maintained at room temperature, 21-27°C (70-80°F), for approximately 24 h.

Samples were then separately subjected to five 50 ft lb (68 J) impacts, produced by dropping the test sphere from a height of 10 ft (3.05 m).

METHOD II, OUTDOOR USE

Ten samples of material were conditioned for 4 h or more at a temperature of 49°C (120°F). Ten additional samples were conditioned for 4 h or more to a temperature of -10°C (14°F).

Immediately following removal of each test sample from the conditioning chamber, the sample was subjected to five 40 ft lb (54 J) impacts, produced by dropping the test sphere from a vertical distance of 8 ft (2.44 m) onto each sample.

RESULTS I AND II

Each sample withstood the multiple impact tests.

HIGH ENERGY IMPACT TEST:

METHOD

Three samples of glazing material maintained at room temperature 21-27°C (70-80°F) for a period of 24 h or more were subjected separately to one 200 ft lb (271 J) impact produced by dropping the test sphere from a height of 40 ft (12.2 m) onto the sample.

RESULTS

Each sample withstood the 200 ft lb (271 J) impact.

CAP/RLG:eg
PC lbry

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New: 9-17-02

TEST RECORD NO. 2

Samples of Model IL916 material constructed with alternate heat strengthened glass, were submitted by the manufacturer and subjected to the following limited test program in accordance with the requirements of UL972, Burglary Resistant Glazing Material.

PERFORMANCE TESTS:

The following tests were conducted.

Test	Standard / Section
Multiple Impact Test	UL972 / 5, 6

Test Record Summary:

The results of this investigation indicate that the products evaluated comply with applicable requirements, and therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report.

Test Record by:
CYNDI PROSSER
Associate Engineer

Reviewed by:
TIM FRITZ
Engineering Team Leader

ATTACHMENT 5

Hanging Hazard Survey – CRH September 2007
(by Dix Safety Officer with response)

Review of Hanging Hazards - CRH

An informal survey of hanging hazards at CRH was conducted during construction of the hospital in September, 2007. After review of the list, the determination was made that six (6) items required addressing. They are:

- Modifying grab bars in handicap bathrooms
- Correcting stair rails provided and installed by contractor that were not per specification. (2 items)
- Closing off access ladder to roof
- Closing openings in the three treatment mall access stair wells
- Removing hose brackets in common handicap showers

The only item not completed at this time is closing the openings in the three treatment mall access stair wells. However the metal frames for the openings have been mounted and the contractor has ordered the glass to install into the frames. Final completion is expected on or around May 2, 2008.

The complete list of items in the survey and responses is contained in the following table:

Central Regional Hospital - Response to Informal September 2007 Internal Survey of "Hanging Hazards"

(See Note 1)

Item	Type	Sub-type	Response	Expected Completion Date
Door	Closer		Code required. Used only in areas observed by staff	n/a
Door	Hinge		Door hinges have been modified by Contractor to conform to specifications	n/a
Door	Handle	1/4 Turn	Door handle as approved in mock up rooms by MH staff	n/a
Door	Handle	Push / pull bar	Code required. Used only In areas observed by staff	n/a
Door – Need to verify	Handle	Panic Bar	Not a hanging hazard. Used only in observed areas.	n/a
Corridor	Handle Rail	Corridor	Used only in Medical and Gero Units. In observed areas.	n/a
Patient Bathrooms	Grab bars		Grab bars are being field modified. Modifications are underway.	Complete
Stair- Need to verify	Hand Rails		Wrong rail installed by contractor. Noted for correction.	Complete
Stair	Sprinkler	Riser (piping)	Emergency stair only. Not used during normal operations.	n/a

Stair	Sprinkler	Branch lines	Emergency stair only. Not used during normal operations.	n/a
Stair	Conduit		Emergency stair only. Not used during normal operations.	n/a
Stair	Water Pipes		Emergency stair only. Not used during normal operations.	n/a
Stair	Access Ladder (to Roof)		In design. Will modify to provide protective cover.	Complete
Stair – Not all	Rails		Some rails provided and installed by contractor are not per specification and will be modified by the contractor.	Complete
Stair	Openings		Under construction.	5/1/2008
Drop Ceilings (lay in type)			These are used only in areas observed by staff. Ceilng type use was approved by management when 10 feet or more above floor.	n/a
Fire Alarm (notification)- Need to verify	Strobe		Sloped top and plastic cover are not considered hanging hazards	n/a
Fire Alarm – Need to verify	Auxiliary Panel		In observed areas only or emergency stairs not used for normal operation.	n/a
Water Fountains – Need to verify			In common areas observed by staff. Not considered a hazard.	n/a
Sink	Faucet		Installed as the result of a change order to get a faucet that poses less of a hazard. Approved by staff before installation.	n/a
Shower (Handicapped)	Hose		Optional. Quick connect design allows for removal. Are removed and will be stored at nurses stations.	n/a
Shower (Handicapped)	Bench		ADA requirement. Can be removed and staff can use portable chair for patient showering.	n/a
Shower (Handicapped)	Hose	Bracket	Brackets are not necessary. Currently being removed.	Complete

Moveable Partitions (Mall)			In areas observed by staff and locked off during non-class hours.	n/a
Cabinetry	Handle (pull)		In areas observed by staff and locked off during non-use hours.	n/a
VAV Box (variable air volume distribution box)- Need to verify	Above Ceiling		Considered a non-issue as these are above ceilings.	n/a
Chaulk Board – Need to verify	Eraser Tray		Considered a non-issue by shape. Located in observed areas.	n/a
Med Gas – Need to verify	Controls(valves)		This is a non-issue. Cover plates and doors have been installed.	n/a
Proximity Badge Readers – Need to verify	Wall device		This is considered a non-issue due to the shape and design of the devices.	n/a
Window Latch (Patient rooms) One window of sample used actual handles	Handle		There are no handles on windows in patient rooms. The operable section of the window can only be opened by use of a device stored at nurse stations relating to actual operations.	n/a

Note 1: The hospital was under construction when Mr. Tom Whalen conducted his informal survey. Many of the items on his list were marked as "need to verify". In addition, Mr. Whalen was unaware of operational features of the hospital and included items in such areas as emergency stair exits that are not used by patients or staff during normal hospital operations. Mr. Whalen was also unaware of items approved by or deemed operationally acceptable by hospital management.

CENTRAL REGIONAL HOSPITAL
SAFETY INSPECTION
Status After Walk Through on May 21, 2008

The items identified by Safety Officer walk-through on May 13, 2008 were reviewed by a team from DHHS, including Safety Officers from Dorothea Dix and John Umstead Hospitals, DHHS management, and building architects during a walk-through conducted on May 21, 2008. The status of the items identified on May 13 is listed in the column headed "**Status 5-21-08**".

AREA	PROBLEM	COMMENTS 5-13-08	**Subsequent Follow-up Status on 5-21-08**
Outside	Electrical wire at front door stubbed in concrete for light fixture or something not complete.	Safety	NA: This was not an electrical wire but was a connection for watering system
Inside the Hospital All Over	Needs fire plans and evacuation routes	Safety/Life Safety	Safety Officers TW and JM to finalize by 5-31-08
	Fire Extinguishers need to be separated away from fire department values and provide a common key to all staff.	Safety/ Life Safety	Not a life safety code issue. Solely a preference by Butner Public Safety. Installation completed 5-19-08; Signage to be revised by 5-31-08
	1. Door handles in private bathrooms present a hanging hazard. 2. No way to lock patient private bathroom off due to bizarre behavior of patient.	Patient Safety	Current hardware was approved by CRH Exec and external groups and by DHHS management. No change required.
	1. Hang risk shields are mounted in such a way that patients can pull a sheet through. 2. Shields have sharp razor like edges	Patient Safety / Hang Risk Suicide Risk	Further corrections to shield mountings where appropriate to be implemented by 6-10-08.

ATTACHMENT 6

CENTRAL REGIONAL HOSPITAL
SAFETY INSPECTION
Status After Walk Through on May 21, 2008

AREA	PROBLEM	COMMENTS 5-13-08	**Subsequent Follow-up Status on 5-21-08**
	Nursing stations need a door at the end to prevent patient entry.	Patient and Staff Safety (Escalating Patient)	Not a safety issue. CRH Exec Team to determine preference for door installation. Other hospitals utilize both options. (Door vs. no door)
	1. Elevator lights are not tamper resistant in elevators with low ceilings. 2. I noticed what appeared to be a keyless swipe (proximity card) and a key cut off switch at each elevator. Do we have a way to prevent patient access to each floor without cutting off the elevators? Keyed access.	Patient Safety Question?	Wire grills to be installed over exposed light bulbs by 6-10-08; Elevator access by proximity card or key; patients have no access
	Still no fire extinguishers on the third floor.	Safety	Items have been on order. Installation by 5-31-08
	Med rooms wooden windows provides little to no safety/ security to med rooms.	Safety/Security	CRH Exec Team to review option of lexan window installation.
Main Lobby – Room 207	Looked into that room again today after visiting it in the past. I still have this safety question as to how will this room be staffed? This room is equipped with an enormous amount of controls and alarms that needs to be monitored at all times with split second responses.	This is a major Life Safety Issues. I would recommend two telecommunications people at all times and Police when available.	This item is not a physical facility safety issue. CRH Exec Team to determine use of room and provide staffing.
Forensic			
Forensic -Hall	Double doors at the end of the hallway near AO Dayroom need a fence around it or a control door. This door empties directly to the outside.	Escape Risk -Preferable a control door and fence It has a camera on it, still	These doors are not an exit to be used by patients or staff, even

CENTRAL REGIONAL HOSPITAL
SAFETY INSPECTION
Status After Walk Through on May 21, 2008

AREA	PROBLEM	COMMENTS 5-13-08	**Subsequent Follow-up Status on 5-21-08**
		won't stop an escape.	in emergency. Marked emergency exit is across hall within 10 feet of this location
Forensic – Room Two (A0051 & G0033)	Shield mounted with what appear to be regular screws. Can also pull a sheet through mounted shield.	Hang Risk	Phillips screws in a couple rooms to be replaced with rivets. Maintenance to check all similar installations by 5-31-08. Other rooms had tamper resistant screws/rivets.
Forensic – G0019 & G0020 Visiting	Thumb latch appears to be on the wrong side.	Patient Safety – Patient can be locked in.	Lock to be re-installed or removed by 5-31-08
Forensic – Hall	Drop ceiling in hallway.	Patient Safety – Escape Risk- Patient can hide in ceiling for possible escape	Not considered risk by CRH Exec Team, outside groups, or DHHS management
Medical	Gas suction units can be blocked by door. Contractors have provided a door stop. However, this arrangement may still cause door to hit suction apparatus depending on set up.	Patient Safety	With door stop, doors do not block outlets which has been tested by respiratory therapist. Will add track bars as additional method to protect apparatus
Pharmacy	Has steel doors mounted in sheetrock. It has an alarm with motion.	Security	Not a security risk: Walls composed of 2 layers of 5/8 inch high impact resistant sheet rock; narcotics stored

CENTRAL REGIONAL HOSPITAL
SAFETY INSPECTION
Status After Walk Through on May 21, 2008

AREA	PROBLEM	COMMENTS 5-13-08	**Subsequent Follow-up Status on 5-21-08**
			in secondary area with steel door secured to hard walls. Room also has motion detector and cameras.
			Impact resistant polycarbonate glass was also examined and meets specs and needs against level 1 forced entry and ballistics (38 caliber).
			Dr. James Osberg & Dan Stewart's notes.